Financial Matters

Owning & Operating a Public Water System

(For Other-Than-Municipal & Nontransient Noncommunity Systems)

As the owner or operator of a public water system, your job is to provide safe water to all users. Preventing contamination and planning for future system needs will help you accomplish this. Often financial burden is a primary factor for water systems failing to meet the state and federal drinking water standards. Understanding your financial obligations will better prepare you to meet the state and federal requirements for public water systems. This guide will help you understand and meet your financial responsibilities as they relate to your public water system.

What is Financial Capacity?

This document discusses the factors that should be considered when assessing the "financial capacity" of a water system. **Financial capacity** refers to the financial resources available to a public water system to support the cost of constructing, operating, maintaining, and improving that water system. To assure adequate financial capacity, a new public water system must demonstrate that relative to its water system it has sufficient revenues, fiscal controls and credit worthiness. This requirement is included in Wisconsin Administrative Code NR 809 Subchapter VIII.

What are the financial responsibilities of owning a public water system?

A. Construction and Installation of System

A safe, adequate supply of water is an important part of any new construction project. Whether building a mobile home park, a school, or a factory, consideration must be given to the construction and operation of the water system. Oftentimes, the design and costs of constructing and operating a water supply system are not carefully considered because, in Wisconsin, it is relatively easy to obtain a sufficient supply of good quality water. Nonetheless, providing a safe supply of drinking water involves many considerations and is subject to state and federal regulations.

The specific costs for constructing your water supply system will be determined by the particular needs of your facility and the natural characteristics of your geographic location. The first step in your financial assessment should be to determine the needs of your water system. You should then be able to develop an itemized list of construction and installation costs.

Public Water System Definitions

The information in this guide is specifically intended for use by individuals planning to construct an Other-Than-Municipal or a Nontransient Noncommunity public water system. Which type of water system do you own or operate?

An **Other-Than-Municipal (OTM)** water system is a public water system that is *not* a municipal water system. It is not owned by a municipality, town, sanitary district, etc. OTM systems serve at least 25 year-round residents or serve 15 service connections used by year-round residents (anything greater than 6 months is considered year-round). Examples include mobile home parks, apartment complexes, and condominium associations.

Any public water system serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units, or 10 or more condominium units is considered to be an OTM system, unless information is available to indicate that 25 year-round residents will *not* be served.

A **Nontransient Noncommunity (NTNC)** water system is a public water system that is *not* a community water system and that regularly serves at least 25 of the same persons over 6 months per year. NTNC systems are generally commercial or institutional establishments having their own water supply, which serves 25 or more of the same people on a regular basis. Examples include schools, factories, office and industrial parks, major shopping centers. Most are privately owned.

General List of Construction and Installation Costs

- Well construction & materials ..... $ _____
- Well pump & installation..... $ _____
- Discharge piping & valves ... $ _____
- Electrical & controls..... $ _____
- Pressure tanks ..... $ _____
- Water treatment devices..... $ _____
- Distribution piping (between well and building plumbing)..... $ _____
- TOTAL ..... $ _____

Water System Professionals

- Well Drillers
- Plumbers
- Water Treatment Suppliers
- DNR Drinking Water Regional Staff

Contact a Water System Professional

You should contact one or more water system professionals to gather information on specific costs associated with well design, water quantity, water demands, water quality, construction costs, and to determine the need for water treatment. If you select a general contractor for construction of your water system, make sure they provide you with answers on all aspects of the water system design.

Ask About Treatment & Regional Concerns

Most knowledgeable water quality professionals will be able to tell you the likelihood of your water needing treatment for naturally occurring contaminants. In addition, they should be familiar with regional contamination problems such as atrazine or nitrates. They should be able to help you determine whether water treatment will be required for your water system, and if so, what type.

B. Water Quality Monitoring

Water quality monitoring is required as part of the operation of public water systems. Each year the DNR sends a monitoring schedule to water systems to remind owners of upcoming sampling deadlines. A preliminary schedule is sent to system owners in October to help systems budget for the following year's monitoring requirements. Then, in February, a monitoring packet, which includes a cover letter, monitoring schedule, report forms, and a list of certified laboratories, is typically sent.

Monitoring Requirements for OTM & NTNC Public Water Systems

New Well Monitoring

- Bacteria
- Inorganic compounds
- Volatile organic compounds
- Synthetic organic compounds
- Radionuclides (OTM systems only, not NTNC systems)

Minimum Routine Monitoring Frequency

- Bacteria: Monthly or quarterly, depending on system size and type
- Nitrate: Annually
- Volatile organic compounds: Quarterly for the first year, annually for years 2 and 3, after that depending on results
- Synthetic organic compounds: Larger systems—twice in 3 years, smaller systems—once in 3 years

Special Monitoring Frequency

- Lead and copper: Typically every 3 years for OTM and NTNC systems
- Radionuclides: Every 3, 6, or 9 years for OTM systems only (not NTNC systems)

The type of monitoring required for your specific system will depend on the types of contaminants of concern in your area. In addition, if water treatment devices are installed, a monitoring schedule will include increased monitoring to ensure that the treatment device is operating properly. The list above shows the general monitoring requirements for a new water system. On the next page is a list that provides cost estimates for standard monitoring tests (understand that monitoring costs may vary from lab to lab).

Up-to-date monitoring costs may be obtained by contacting a certified laboratory. Water samples must be analyzed at a laboratory certified for Safe Drinking Water Act analysis. A list is available from the DNR, or on the web at **http://www.dnr.state.wi.us/org/es/science/lc/search/.**

Minimum Monitoring Costs

This itemized list reflects the minimum monitoring costs associated with a nine-year monitoring cycle. Please note that this is the minimum monitoring required, and your system may require additional monitoring for specific contaminants. The cost figures apply to a water system that meets the following criteria:

1. No detections of volatile organic compounds (VOC),
2. No detections of synthetic organic compounds (SOC),
3. Reduced monitoring for lead and copper, and
4. The remaining water quality parameters meet the drinking water maximum contaminant levels (MCLs).

Minimum Monitoring Costs: 9-Year Cycle*

Bacteria—Total Coliform (36 samples—assumes quarterly)	$ 670
Nitrate and Nitrite (9 nitrate—assumes annually, 1 nitrite)	$ 185
VOC (12 samples—quarterly in first year and annually in subsequent 8 years)	$1,950
SOC (1 sample in first year)	$ 900
IOC (3 samples—1 sample every 3 years)	$ 900
Lead and copper (30 samples in 9 years)	$1,300
Radionuclides (NOT required for NTNC systems) (4 consecutive quarterly samples, then 1 sample every 9 years)	$1,330
9-Year Total	**$7,235**

First Year Monitoring Costs
approximately $2,500

*Costs are based on 2001 figures obtained from Safe Drinking Water Act certified laboratories.

C. Operation & Maintenance Costs

Repair and maintenance of your water system could also result in significant costs. The following table shows the approximate years of useful life for water system equipment. However, the life of equipment can shorten dramatically depending on the water quality of your well.

Iron Bacteria

Some wells become infested with a nuisance called "iron bacteria." These bacteria can build up within the well, creating taste and odor problems and reducing the capacity of the well. Once established, these bacteria are almost impossible to eliminate. Severely infested wells may require cleaning on an annual basis. The iron bacteria can also establish in the water distribution system and plumbing. It can cause taste and odor problems, reduce the carrying capacity of the pipes, and may potentially clog water treatment equipment. This may require continuous chlorination of the distribution system to control the bacteria.

Corrosion

A significant portion of the water in the state of Wisconsin has a low pH (less than 7). This low pH is extremely corrosive to metal piping materials. (The corrosive nature of the water can be worsened by contact between dissimilar metals and improper grounding.) Corrosion can lead to failure of the pump column and leaks within the piping systems. Even without leaks, the corrosion can elevate copper levels within the distribution system that will require installation of water treatment equipment.

Approximate Useful Life for Water System Equipment

- Well: 50 years
- Well pump: 15 years or more
- Pressure tank: 15 years or more
- Distribution piping: exceeds 50 years

Tools to Help Meet Your Financial Responsibilities

The following "tools" may help you to restore or maintain the financial capacity of your water system. The goal is to be better prepared to manage the day-to-day operation of the water system and handle emergencies as they arise.

- **Prepare a long-range financial plan/budget:** Budgeting enough money is an important part of owning and operating a public water system. The purpose of long-range financial plans is to make sure that expected (and unexpected) expenditures do not exceed available resources. Funds need to be budgeted to adequately support operation and maintenance of your public water system. Funds need to be budgeted for current and future expenses such as equipment purchases, monitoring, training, electricity, and other day-to-day expenses.
- **Create a reserve account:** Beyond water quality issues, there can be catastrophic occurrences such as fires, lightening strikes, and accidents that will require repair and maintenance. An incident, such as running into the well casing with a vehicle, can result in significant repair costs. These types of events are unforeseen and will not be part of your predicted expenditures. It is strongly recommended that you establish a reserve account to provide funding for unforeseen maintenance and repair costs.
- **Review monthly or annual financial statements:** Financial statements or reports provide essential information about your business' operations. The goal of financial reporting is to provide information that is useful in making business and economic decisions, including decisions, which may affect your public water system. One of the primary objectives of financial statement analysis is identifying major changes in trends, amounts, and relationships…and investigating the reasons for those changes.
- **Prepare a capital improvement plan:** Capital improvement plans (CIPs) are planning documents produced by water systems that catalogue, for a specified period of time, all needed capital projects, the reason for each project, and the associated costs. Often, CIPs include a description and assessment of the system's existing infrastructure. They always include information on infrastructure needs. A CIP will help a water system owner to understand and appreciate the need for infrastructure improvements and the costs associated with those improvements.
- **Obtain access to credit:** Having access to credit or some form of financial assurance prior to construction of a new water system or expansion of an existing system is important. Sufficient funds should be available to repair and/or operate a system in the event that an owner is unable to do so.
- **Hire an accountant:** Your business and water system may benefit from hiring an accountant to maintain the financial records and accounts. A trained accountant will have the expertise to organize your business data to help you make informed decisions.

New & Proposed Regulations

As an owner of a public water system, you should be aware of the following new and proposed regulations that will likely impact your operation in the next few years. These future regulations will have associated costs that should be included in your overall financial assessment.

New Regulation—Operator Certification

As of January 1, 2001, all OTM and NTNC water systems must have a designated "operator-in-charge." This operator needs to be certified by the DNR. A certified operator is a person that passes a written examination and subsequently obtains 6 hours of continuing education credits every 3 years to renew his/her certification. Training courses will be available to help people prepare for the exam. The courses will be held directly prior to the exams. The training courses and exams are expected to start in late 2001. They will be offered throughout the state. The DNR will allow a grace period of 2–3 years to comply. If, after the grace period, these systems do not have a certified operator, the Department will begin enforcement action. The grace period will allow all system owners sufficient time to either contract for a certified operator's service or have one of their employees obtain certification.

There will likely be a cost associated with hiring a certified operator or providing training for a staff member to become a certified water system operator for your facility. Assuming a cost to hire and outside operator on a per visit basis or $50-$100 and a minimum of monthly visits, the costs would be in the range of $600 to $1,200 per year. The cost of training and certification for an employee could be in the range of $250 to $300. This assumes one training session per year at $75, eight hours of paid time for the employee at $15 per hour, and travel and certification costs. It does not include meals and overnight lodging.

Proposed Regulation—Radon

A new drinking water standard for radon is proposed for adoption in late 2001. Radon poses significant risks to human health primarily through inhalation of air containing high radon concentrations. Radon gas can escape from water when exposed to air or enter through building foundations. Because inhalation is the primary pathway associated with radon, EPA has proposed a two-tiered standard for drinking water. For states without a radon "indoor air mitigation program," the drinking water standard will likely be 300 pCi/l. For states with an indoor air mitigation program, the drinking water standard will likely be 4,000 pCi/l.

Radon is naturally occurring in Wisconsin groundwater. There are areas in Wisconsin, particularly in the north-central portion of the state, where radon levels exceed the 4,000 picocuries per liter (pCi/l) standard. Radon can be removed from water most easily by aeration (although other treatment processes are available). If the water is also high in iron and manganese, additional filtration may be required to remove the iron and manganese after the aeration process to prevent "red water" problems in the water system.

Revised Regulation—Radium

The federal Radionuclides Rule took effect on December 7, 2000. As part of the rule, requirements for radium 226 and radium 228 became enforceable at all community water systems. This includes OTM water systems but *not* NTNC water systems. Radium is a naturally occurring element in Wisconsin. It can enter groundwater by passing through bedrock. The primary health risk from radium exposure is bone cancer. The drinking water standard for radium 226 and 228 combined is 5 picocuries per liter (pCi/l).

A significant portion of Wisconsin has high naturally occurring radium. Radium is present particularly in the sandstone aquifer system below the Maquoketa Shale in the eastern and southeastern part of the state. Radium can be removed from water using a standard water softener. However, pretreatment could be required if the water is also high in iron and manganese. This is to prevent the iron and manganese from fouling the softener.

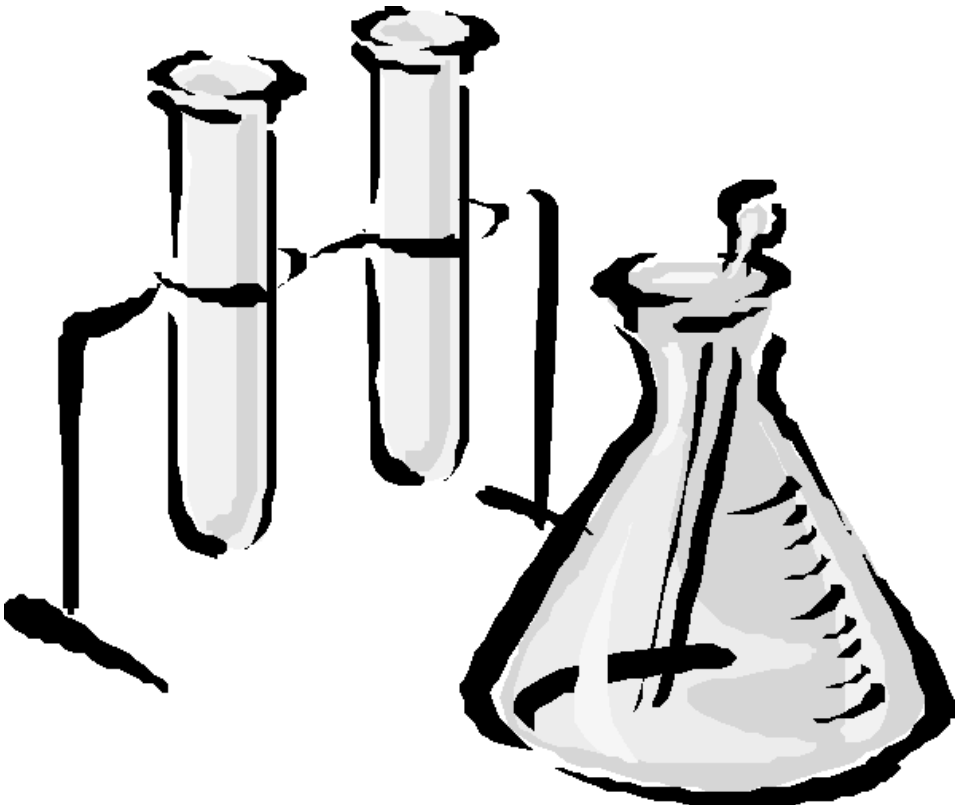
Proposed Regulation—Groundwater Rule

The proposed Groundwater Rule establishes multiple barriers to protect against bacteria and viruses in drinking water from ground water sources and will establish a targeted strategy to identify groundwater systems at high risk for fecal contamination. This rule will apply to all public groundwater systems. The rule will specify when corrective action (including disinfection) is required to protect consumers who receive water from groundwater systems contaminated with bacteria and viruses. As part of the upcoming rule, EPA may require states to increase the minimum number of coliform samples collected noncommunity systems. Monitoring could increase from quarterly to monthly. In addition, under certain circumstances, special virus sampling would be mandated.

At approximately $18.50 per sample the increase in bacteria (total coliform) sampling would add 8 samples or $148 to the annual monitoring costs. Should special virus sampling be required, each virus sample would cost $200–$250.

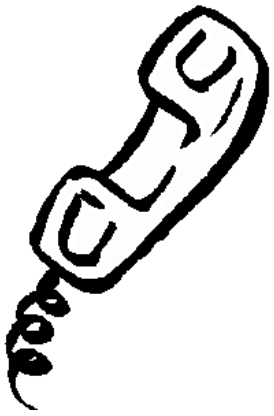
In conjunction with the monitoring requirements of the upcoming Groundwater Rule, states will need to develop evaluation criteria to identify groundwater systems that lack sufficient protection from bacteria and viruses. Those that lack protection will be required to provide continuous disinfection of the water at the water source.

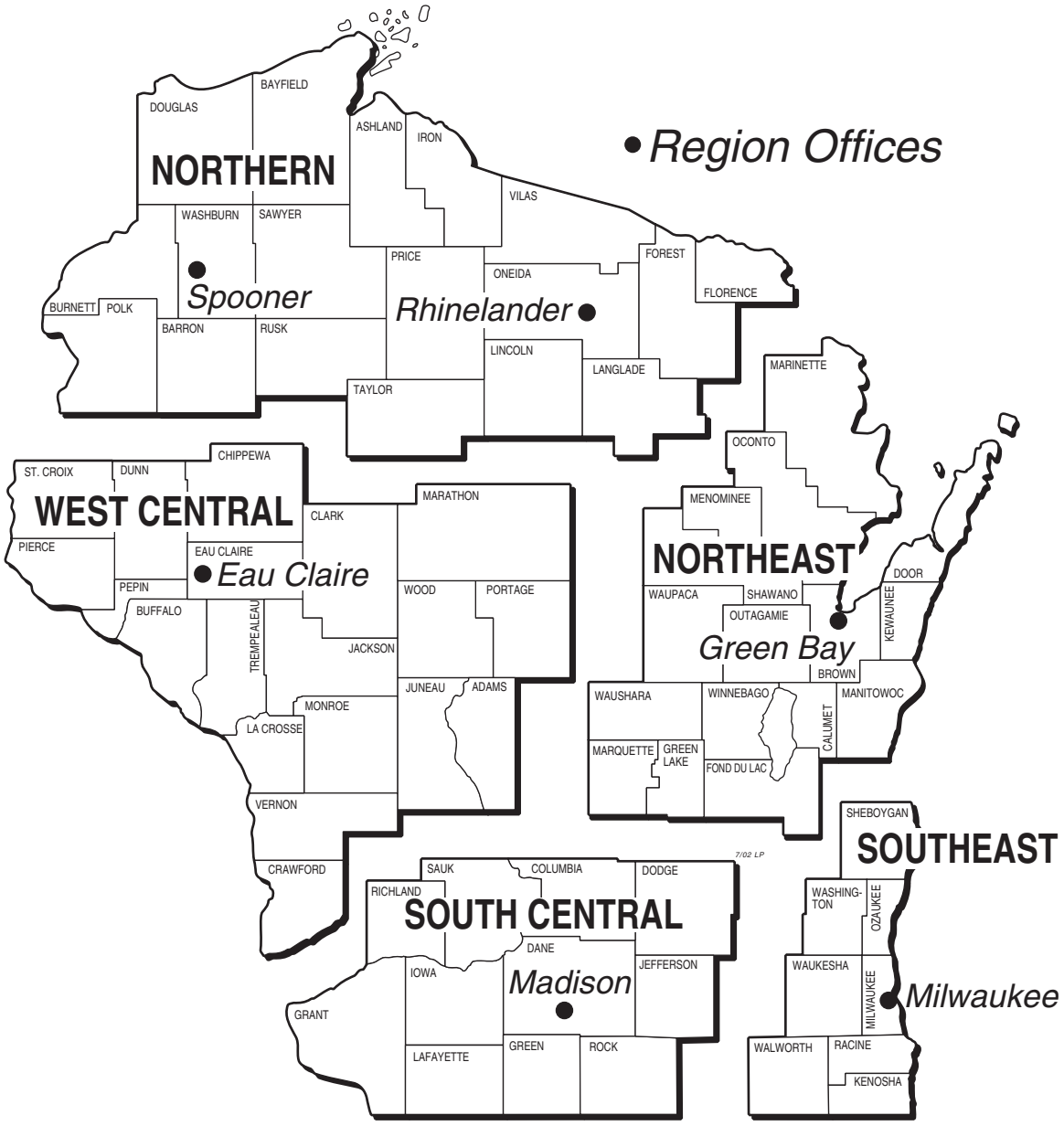
Costs vary based on the type of disinfection, required pretreatment, and flow rate of systems. For example, costs for an Ultra Violet (UV) disinfection system with low flow rates (4 to 5 gallons per minute) and minimal pretreatment costs may be approximately $3,000. Costs for a 20-gallon per minute UV system with extensive pretreatment may be $30,000.



Where can I get more information?

- Refer to "An Operator's Handbook for Safe Drinking Water" for additional information regarding your responsibilities as a public water system owner. It is available on the DNR web site at **http://www.dnr.state.wi.us/org/water/dwg/CapDevl/Operator.pdf.**
- Check out DNR's drinking water web site: **www.dnr.state.wi.us/org/water/dwg/** for additional fact sheets and guidance.
- Contact the DNR's Capacity Development Coordinator by phone (608) 266-8470.





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